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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,689	01/28/2004	Georg Georgakos	200217401	2062

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EXAMINER

HA, NGUYEN T

ART UNIT PAPER NUMBER

2831

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,689

Applicant(s)

GEORGAKOS, GEORG

Examiner

Nguyen T. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0404</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the term "comprise" in the abstract line 5 is legal phraseology.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless—

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Vathulya et al. (US 6,297,524).

Regarding claim 1, Vathulya et al. disclose a storage capacitor (figure 3) comprising:

- at least one first electrode (27A) including a stack of metal parts (A and B) spaced at intervals from one another, and contact elements (32) connecting respective pairs of the metal part;
- at least one second electrode (27B) including a stack of metal parts spaced at intervals from one another, and contact elements (32) connecting respective pairs of the metal parts, and
- the at least one first electrode and the at least one second electrode positioned laterally adjacent one another a cooperable with one another to provide a storage capacitance (figure 3).

Regarding claim 2, Vathulya et al. disclose the stack of the at least one first electrode extends substantially parallel to the stack of the at least one second electrode (figure 3).

Regarding claim 3, Vathulya et al. further including a plurality of the second electrodes (27B) positioned laterally adjacent and peripherally around the at least one first electrode (27A, figure 3).

Regarding claim 8, Vathulya et al. further including a plurality of the second electrodes connected together (figure 3).

Regarding claim 9, Vathulya et al. further including a plurality of the first electrodes connected together (figure 3).

Regarding claim 10, Vathulya et al. further including a metal part (A & B) and further contact elements (32) connecting the further metal part to the second electrodes, the further metal part spaced from the at least one first electrode in a longitudinal

direction of the at least one first electrode by a distance corresponding to a thickness of the further contact elements (figure 3).

Regarding claim 11, Vathulya et al. disclose the metal parts of the at least one first electrode (27A) are positioned in respectively corresponding metal layers in which respectively corresponding metal parts of the at least one second electrode (27B) are also respectively positioned (figure 3).

Regarding claim 12, Vathulya et al. further including a plurality of the second electrodes, the metal parts of each of the second electrode positioned in respectively corresponding metal layers in which respectively corresponding metal parts of the remaining second electrodes are also respectively positioned, and wherein the metal parts in at least one of the metal layer are connected together (figure 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vathulya et al. (US 6,297,524).

Regarding claims 4-7, Vathulya et al. disclose all the claimed limitations discussed above with respect to claim 3, except for the second electrodes are substantially evenly distributed peripherally around the at least one first electrode, or the

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second electrodes are position on a rectangle that surrounds the at least one first electrode, or the second electrodes are positioned on a hexagon that surrounds the at least one first electrode, or the second electrodes are positioned on a diamond shape that surrounds the at least one first electrode. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second electrodes are substantially evenly distributed peripherally around the at least one first electrode, or the second electrodes are position on a rectangle that surrounds the at least one first electrode, or the second electrodes are positioned on a hexagon that surrounds the at least one first electrode, or the second electrodes are positioned on a diamond shape that surrounds the at least one first electrode, since the applicant does not solve a particular problem with these shape and more than mere change of form or shape is necessary for patentability. **Span-Deck Inc. v. Fab-Con, Inc, (CA 8, 1982) 215 USPQ 835.**

7. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter et al. (US 2002/0191455) in view of Vathulya et al. (US 6,297,524).

Regarding claim 13, Richter et al. disclose a memory cell arrangement (figure 1A) comprising:

- a plurality of memory cells (15a, 15b, 15c) for storage of information, each the memory cell including a storage capacitor (20a, 20b, 20c).

Richter et al. lack :

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- each the storage capacitor including at least one first electrode that includes a stack of metal parts spaced at intervals from one another, and contact elements connecting respective pairs of the metal parts;
- each the storage capacitor including at least one second electrode that includes a stack of metal parts spaced at intervals from one another, and contact elements connecting respective pairs of the metal parts; and
- the at least one first electrode and the at least one second electrode of each the storage capacitor positioned laterally adjacent one another and cooperable with one another to provide a storage capacitance.

Vathulya et al. teach:

- the storage capacitor (20) including at least one first electrode (27A) including a stack of metal parts (A and B) spaced at intervals from one another, and contact elements (32) connecting respective pairs of the metal part;
- at least one second electrode (27B) including a stack of metal parts spaced at intervals from one another, and contact elements (32) connecting respective pairs of the metal parts, and
- the at least one first electrode and the at least one second electrode positioned laterally adjacent one another a cooperable with one another to provide a storage capacitance (figure 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the capacitor of Vathulya et al. in the Richter et al. memory

cell arrangement in order to improve high capacitance density for the memory cell arrangement.

Regarding claim 14, Vathulya et al. further including a metal part connecting all of the second electrodes of all of the storage to one another (figure 3).

Regarding claim 15, Vathulya et al. further including a metal part connecting all of the second electrodes of all of the storage capacitors to one another (figure 3).

Allowable Subject Matter

8. Claims 16-20 are allowed.

The following is an examiner's statement of reasons for allowance:

With respect to claims 16-20, the prior art alone or in combination does not teach the limitation of microelectronic circuit comprising: each of a storage capacitor having the at least one first electrode and the at least one second electrode positioned laterally adjacent one another and cooperable with one another to provide a storage capacitance, wherein a selection circuit coupled to the at least one first electrode of the at least one storage capacitor, and the at least one second electrode of the at least one storage capacitor adapted for coupling to a predetermined potential.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Citation Relevant of Prior Art

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Buynoski (US 6,452,250) discloses stacked integrated circuit and capacitor structure containing via structure.
- b. Ahiko et al. (US 6,407,907) disclose multi-layer ceramic capacitor.
- c. Lange et al. (US 6,258,656) disclose capacitor with high dielectric or ferroelectric material based on the fin stack principle and production process using a negative mold.
- d. Kotecki et al. (US 6,262,450) disclose DRAM stack capacitor with vias and conductive connection extending from above conductive lines to the substrate.
- e. Akcasu (US 5,208,725) discloses high capacitance structure in a semiconductor device.
- f. Lee et al. (US 5,742,472) disclose stacked capacitors for integrated circuit devices and related methods.

Conclusion

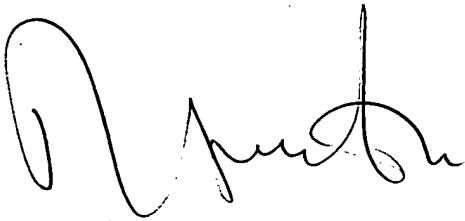
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T. Ha whose telephone number is 571-272-1974. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-2800 ext. 31. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Nguyen T. Ha', with a large, stylized initial 'N'.

Nguyen T. Ha
May 4, 2005